

SOME APHIDIDÆ OF THE GENUS NECTAROPHORA FROM NEW MEXICO.

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Nectarophora rudbeckiæ (Fitch).

Hab.—Beulah, N. M., alt. 8,000 ft., very abundant on *Rudbeckia ampla*, A. Nelson. It is preyed upon by *Hippodamia convergens*. This species is easily known by its bright scarlet colour. Monell reports *N. rudbeckia* from many genera of Compositæ at St. Louis, Mo.; in New Mexico I have found it only on one species of *Rudbeckia*; even the species on *Rudbeckia hirta* is quite different.

Nectarophora solidaginis (Fabr.).

Hab.—Beulah, N. M., July 26, numerous on *Solidago*. Blackish-red, some almost black; nectaries black; cauda light yellowish; stigma pale greenish (yellowish in *N. rudbeckiæ*); femora with basal two-thirds pale yellowish, distal third blackish. The very young may be slightly tuberculate dorsally. Many of the young are bright red. In the winged female the cauda is just half the length of the nectaries; the latter are imbricated.

This species is very near to *N. rudbeckiæ*, but evidently distinct. It agrees with Buckton's account of European *N. solidaginis* in all essential particulars; Buckton's description and figure indicate a black cauda, but in his table on p. 102 he says it is yellow. The species is new to America, but is evidently native; a member of the circumpolar fauna.

Nectarophora corallorhizæ, sp. n.

Hab.—Beulah, N. M., July, 1902 (*W. P. Cockerell*). Numerous on *Corallorhiza multiflora*.

Apterous ♀.—Green (pale yellow mounted in balsam), without markings; length $2\frac{1}{2}$ to nearly 3 mm.; eyes scarlet; cauda pallid; nectaries very long, colourless at base, blackish in middle, paler beyond, but blackish again at the extreme tip; antennæ pale, dusky at ends and at the joints; legs pale, apical portion of femora dusky; tarsi black or nearly so. Antennæ over 3 mm.; cauda ensiform, about $630\ \mu$; nectaries $1400\ \mu$; antennal joints measuring in μ ; (1.) prox. 150, (2.) 100, (3.) 1130, (4.) 920, (5.) 730, (6a.) 150, (6b.) 1020.

Nectaries slender, often curved outwards towards the end. Sensoria few, on under side of basal half of third joint.

N. lutea, Buckton, found on greenhouse orchids, is yellow, with a large dorsal dark brown spot, and has much shorter nectaries. *N.*

urticae, Kalt., seems to resemble our insect as much as anything, but it is not the same.

Nectarophora agrimoniella, sp. n.

Hab.—Beulah, N. M., July 27, 1902 (*W. P. and T. D. A. Cockerell*). Very abundant on *Agrimonia eupatoria*, Auctt., inhabiting the flower-stalks.

Winged ♀ (full of young) —Large, light apple green (orange-ferruginous mounted in balsam), without markings; eyes black; femora with basal two-thirds light green, distal third black, or sometimes less (about $90\ \mu$); distal $90\ \mu$ of tibiae, and all of tarsi, black; nectaries suffused with blackish; antennae dusky, joint 3 black except the basal $30\ \mu$; third antennal joint with very numerous (about 32) protuberant sensoria, about equally distributed on the proximal and distal halves; cauda tapering, with a blunt tip, sides with bristles set on little prominences; no capitate hairs anywhere.

Length of body about 3 mm., wings about $3\frac{1}{2}$ mm.; other measurements in μ :—Antennal joints: (1.) 120, (2.) 110, (3.) 1100, (4.) 900, (5.) 730, (6a.) 160, (6b.) 1230. Cauda about 450; nectaries 1000, with imbricated surface; beak 700 to 750; anterior femur 1000; marginal cell with substigmatic portion 380, and poststigmatic portion 660.

Allied to *N. erigeronensis* (Thos.), which it resembles in the numerous sensoria on joint 3.

Nectarophora rudbeckiarum, sp. n.

Hab.—Beulah, N. M., July 26, 1902, on *Rudbeckia ampla*, with *N. rudbeckiae*, but not nearly so numerous.

Winged ♀.—Light green; eyes, ends of tibiae, and tarsi, black. Length of body about $2\frac{1}{4}$ mm., of wings about $4\frac{1}{2}$ mm. Measurements in μ : Nectaries 1200; cauda about 600, breadth at base 120, in middle 170; beak about 750; anterior femur 1500; antennal joints, (3.) 1200, (4.) 1250, (5.) 1070; marginal cell with substigmatal portion 420, poststigmatal 500. *Apterous* ♀ about 4 mm. long, including cauda. This cannot be a green variety of *N. rudbeckiae*, for the following reasons:

- (1.) *N. rudbeckiae* has much shorter nectaries, not over $850\ \mu$.
- (2.) *N. rudbeckiae* has a longer marginal cell, with substigmatal portion 550, poststigmatal $700\ \mu$.

N. rudbeckiarum differs as follows from *N. agrimoniella*:

- (1.) The third antennal joint is not nearly so dark, and has only about ten hardly protuberant sensoria, which are practically confined to the basal half of the joint.

(2.) The cauda, which in *agrimoniella* tapers from the base to the apex, in *rudbeckiarum* is spear-head shaped, with the base narrower than the middle. These descriptions represent the cauda as seen from above.

(3.) The apical portion of the stigma is narrower and more produced than in *agrimoniella*.

(4.) The femora are not at all black at distal end.

(5.) The nectaries are green. This character distinguishes the species from *N. erigeronensis*.

N. rudbeckiarum turns orange-ferruginous mounted in balsam ; darker than *N. agrimoniella*.

Nectarophora heleniella, sp. n.

Hab.—Beulah, N. M., July 26, on flower-heads of *Helenium hoopesii*, Gray. Not numerous.

Winged ♀.—Apple green, smaller and deeper coloured than *N. rudbeckiarum* ; length of body about 2 mm., wings about $3\frac{1}{3}$. Eyes black ; nectaries only slightly dusky ; femora greenish, only moderately suffused with blackish apically ; antennæ black, except short basal joints and extreme base of third joint ; third joint with nine large and four small sensoria, the last one $45\ \mu$ from base of joint. Measurements in μ : Nectaries 710 ; cauda about 300, tapering from base to apex, in the manner of *N. agrimoniella* ; beak about 600 ; anterior femur 920 ; antennal joints, (3.) 770, (4.) 660 ; (5.) 530, (6a.) 140, (6b.) 1140. Marginal cell with substigmatal portion 320, poststigmatal 500.

The apterous form (immature) has the cauda short and broad, broad-pyramidal in outline seen from above. The immature form is slightly pruinose, and has a darker green dorsal band.

Allied to *N. geranii*, but distinct.

Nectarophora Martini, sp. n.

Hab.—Beulah, N. M., 1902, on many plants. Named after my son Martin, who used to help me collect insects at Beulah. The form on *Helenium* may be taken as the type. Similar to *N. sonchi* (L.), of which *N. ambrosiæ* (Thos.) is the American representative, if not a synonym, but differs especially in the young, which are pruinose and do not share the piliferous tubercles. It is also allied to *N. sonchella*, Monell, but the fourth antennal joint is not tubercular, and to *N. calendulae*, Monell, but that has the third joint very slightly tubercular. The two last-mentioned are also not pruinose when young, so far as I can learn ; herein they will agree with *N. solidaginis*, which is easily known from *N. Martini* by the much redder, non-pruinose, young, as well as the shorter nectaries of the winged female.

I assume that the insects collected on different plants are the same species, because I am unable to find any tangible characters to separate them ; but I give my notes on each lot separately :

(1.) On *Rudbeckia hirta*, Aug. 4. Winged form dark reddish to practically black ; nectaries black, cauda pale yellowish ; femora with apical half black, basal half pale ; stigma pale greenish. Apterous form shiny, 3 mm. long, not counting cauda.

Winged ♀.—Cauda ensiform, with large lateral bristles ; length about 500 μ . Nectaries about 1000 μ long, black. Eyes black. Antennal joints in μ , (3.) 1070, (4.) 980, (5.) 850, (6a.) 200, (6b.) 1300. Stigma tapering, marginal cell with poststigmatal part considerably longer than substigmatal. Antennæ black, joint 3 with prominent sensoria (at least 40) along its whole length except extreme ends. Joint 4 without sensoria. The other lots enumerated below showed the same microscopical characters except some little difference in size, and a smaller number of sensoria on joint 3 in the material from *Potentilla* and *Frasera*.

(2.) On heads of *Helenium hoopesii*, July 26. Young and apterous adults. The young are reddish, with greenish legs, and have a decided bluish pruinose bloom. They are not tuberculate. The apterous adults are shiny dark wine-red, with the legs as in *N. rudbeckie* ; i.e., basal two-thirds of femora pale ochreous, apical third, and tibiæ and tarsi, black or blackish. Nectaries long, black, obviously longer than in *rudbeckie*. The bluish bloom is conspicuous even in subadults. On Aug. 3 the species was found in great abundance, winged specimens being present. The green species (*N. heleniella*) was present in smaller numbers ; it cannot be a colour-variety of *N. Martini*, owing to the great difference in the sensoria on the third antennal joint. Measurements in μ :—Apterous ♀ : nectaries 1330 ; antennal joints, (2.) 120, (3.) 1100, (4.) 900, (5.) 735, (6a.) 150, (6b.) 1030. Winged ♀ : nectaries 820 ; antennal joints, (3.) 930, (4.) 790, (5.) 710, (6a.) 180, (6b.) 1090.

(3.) On *Frasera speciosa*, Auctt., abundant. Winged ♀ : dark wine-red ; stigma yellowish ; legs black, basal $\frac{2}{3}$ of femora and coxæ, pale greenish ; nectaries black, yellow at extreme base ; cauda reddish. Immature forms pruinose. Measurements in μ —Winged ♀ : nectaries 1000 ; antennal joints, (1.) 160, (2.) 100, (3.) 960, (4.) 810, (5.) 720, (6a.) 170, (6b.) 1000.

(4.) On flower-heads of *Zygadenus Nuttallii*, Coult. Flora, abundant July 31. Winged ♀ : Head and thorax reddish-brown, abdomen darker ; nectaries black, pale at extreme base ; femora very pale greenish, black at apex ; young pruinose.

(5.) On *Eriogonum* (a tall species with greenish-yellow flowers), July 29, a few only. Winged ♀: Shining very dark plum colour; abdomen same colour as head and thorax; legs black, basal half or less of femora, and coxæ, pale ochreous; nectaries black; cauda and stigma ochreous yellow; antennæ black; wings strongly iridescent. Young pruinose, with olive-slate legs, antennæ and nectaries. The nectaries are obviously shorter than in the *Potentilla* form, and are held erect. Apterous ♀: $2\frac{1}{3}$ mm. long. Measurements in μ : nectaries 810; antennal joints, (1.) 150, (2.) 100, (3.) 920, (4.) 770, (5.) 650, (6a.) 185, (6b.) 680.

(6.) On *Ligusticum* (species with yellow flowers), July 29; not many. Winged ♀: Dark brown; nectaries black; legs black, basal half of femora, coxæ and basal half of tibiæ more or less, yellowish. Measurements in μ : nectaries 840; antennal joints, (1.) prox. 150, (2.) 100, (3.) 880, (4.) 730, (5.) 710, (6a.) 200, (6b.) 1220. The *Ligusticum* grew mixed with the *Potentilla* next mentioned.

(7.) On *Potentilla* (apparently *P. pulcherrima*), July 29, first found by my wife; very abundant. Dark reddish-gray, winged form with the head and thorax more decidedly red, contrasting with the darker abdomen. Half-grown more or less pruinose, with legs, antennæ and nectaries dark olive. In the winged form these parts are black or blackish, with the basal two-thirds of femora light yellowish. Stigma light yellowish. Nectaries over twice length of cauda, which is pink. Measurements of winged ♀ in μ : nectaries 990; antennal joints, (1.) prox. 150, (2.) 100, (3.) 980, (4.) 950.

The specimens on the *Potentilla* have the nectaries a trifle shorter than those on *Frasera* and *Zygadenus*, but otherwise appear just the same. Curiously, however, the *Potentilla* form when disturbed jerks to and fro, but will not drop to the ground; while those on *Frasera* and *Zygadenus* do not jerk nearly so readily, neither do they fall. This difference in the reaction of the creature to irritation was repeatedly observed, and suggested that the species were different, but I am quite unable to find satisfactory morphological characters to separate them. Monell has remarked that *N. sonchella* always drops to the ground when disturbed.

Nectarophora, spp.

Other species of *Nectarophora* were taken at Beulah on *Sophia incisa*, *Geum*, *Gnaphalium decurrens*, *Phacelia circinata*, *Erigeron* and *Populus angustifolia*, but I did not secure the winged females and so have deferred their description.